



Assessment of prescribing patterns of Interns in an Urban Health Training Centre of a Tertiary care teaching hospital, Aurangabad, Maharashtra: A cross sectional study

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ABSTRACT

Background

Internship is an important period where the medical student learns to apply the clinical knowledge. Rational prescription writing skills form the bedrock of becoming a good physician. Budding doctors are often unaware of the importance of rational drug prescribing. Hence this study was conducted to examine the drug prescribing patterns in Internship undergoing medical students.

Methods

A cross-sectional study was conducted at Urban Health Training Centre Shahganj for a period of 3 months using the World Health Organization/Network of Rational Use of Drugs (WHO/INRUD) core drug use indicators and patient care indicators. In the present study 606 prescriptions were used for assessing prescribing indicators and 30 patients were interviewed for assessing patient care indicators. Data entry and analysis of the quantitative data was done by SPSS version 21. In the statistical analysis, frequencies and percentages were obtained.

Results

The total number of drugs prescribed by its generic name was 1747 (90%) and the drugs given by their brand name were 150(7.7%). The total number of encounters with antibiotics was 19.70% and with injectables was 9.80%. Average consultation time and average dispensing time was 0.97 minutes and 17.9 seconds respectively. Percentage of medicines actually dispensed, percentage of medicines adequately labeled and percent of patients with adequate knowledge of correct dose were 87.5%, 0% and 76.8% respectively.

Conclusion


A training programme before internship will help in improving the standards of prescription patterns. Also continuous assessment of rational drug use is recommended in the health facilities.

Keywords: Prescribing patterns, patient care indicator, interns, urban health training center

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INTRODUCTION

Gaps in knowledge and suboptimal practical skills of fresh interns have resulted in medical errors and have compromised patient safety.[1] Drug use evaluation is a structured, methodological, and criteria-based drug assessment system that helps to evaluate the actual trend of drug use in a particular setting. It is a system of collecting information to identify issues related to drug use and, eventually, to take steps to address the identified problem. Evaluation of drug use has a significant role to play in encouraging the rational use of pharmaceutical drugs and effective prescribing patterns [2, 3] The definition of rational use of medicines “ –Patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements, for an adequate period, and at the lowest cost to them and their community.”[4]. As reported by the World Health Organization (WHO), more than half of all medicines in the world are inappropriately prescribed in developing countries, where monitoring and evaluation of drug utilization are at an embryonic stage [5]

The ultimate goal of rational drug use is to foster better quality of pharmaceutical care, to minimize the cost of drug therapy, to avoid preventable adverse drug reactions and drug interactions, to maximize therapeutic outcomes and to promote patient adherence[6] Irrational prescribing practices result in unsafe and ineffective treatment, aggravation or prolongation of disease state, harm and distress to the patients and increased costs.[7,8] Irrational drug use will cause excessive community healthcare demand, and inevitably there will be medication stock-outs and deterioration of patient trust in the quality of health care service [9].The increase in antibiotic resistance due to the overuse of antibiotics is one of the major problems of the irrational use of medicines.[10,11].Conducting periodic studies of pattern of drug use in various hospital settings or patient populations is essential to identify specific medicine use problems, sensitize practitioners on rational medicine prescription, and to critically analyze the current hospital drug policies and to make recommendations based on various guidelines

to improve upon the current drug usage pattern [12,13]. So this study was conducted to assess prescribing patterns among interns.

METHODS

A cross sectional study was conducted among interns at urban health training center, Shahaganj of Government Medical College, Aurangabad, Maharashtra during July 2021 to September 2021.

Institutional based cross-sectional study design was used to collect the quantitative data from prescription papers dispensed to outpatients between July 2021 to September 2021. According to the WHO guide, at least 600 encounters should be included in a cross-sectional survey to describe the current prescribing practices, with a greater number if possible [14]. Therefore, prescribing indicators were assessed retrospectively using 606 prescriptions selected by randomly among prescriptions

All outpatient medicine prescription encounters with at least one medicine were included in study whereas prescribing encounters that are illegible or those containing medical supplies were excluded. Prescribing encounters for normal delivery services, referral cases, routine vaccines, and contraceptives were excluded from the study. Patient care indicators were assessed prospectively by conducting exit interview for 30 patients at the outpatient pharmacy [14].30 Patients which were selected randomly for patient care indicator study were those who attended in outpatient pharmacy and willing to participate. Those who were severely ill, unable to talk, and who were not willing to participate were excluded from this study.

Data was collected using prescribing indicator form and patient indicator form [14]. SPSS version 21 was employed for data entry and analysis of the quantitative data. In the statistical analysis, frequencies and percentages were obtained. The findings were interpreted according to standard values of WHO prescribing indicators.

Results

Prescription Indicators

The total number of drugs prescribed by its generic name was 1747 (90%) and by their brand name was 150(7.7%). Antibiotics constituted 14.40% of total drugs. The total number of

encounters with antibiotics was 19.70% and injectables were 9.80%. Drugs prescribed from the National Essential Drug List (EDL) (2015) were 100%. [Table1].

Table 1: Comparison of WHO prescribing indicators in the current study with Ideal value

Prescribing indicators assessed	Total drugs/encounters	Average/Percentage	Optimal/ideal value[15]
Drugs per encounter	1942	3.2	1.6-1.8
Drugs prescribed by generic name	1792	92.2%	100
Encounter with antibiotics	279	45.9%	20.0-26.8%
Encounter with injection	60	9.8%	13.4%-24.1%
Drugs from EDL(national)	1942	100	100

As per the results of this study, the average number of drugs prescribed per prescription was 3.2, which was higher than the standard value (1.6–1.8) [15]

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Patient Care Indicators

Table 2: Comparison of WHO patient care indicators in the current study with Ideal value

Prescribing indicators assessed (Total patients =30)	Average/Percentage	Optimal/ideal value[15]
Average consultation time (minutes)	0.97	≥10
Average dispensing time (seconds)	17.9	≥90
Percent medicines actually dispensed	87.50%	100%
Percent medicines adequately labeled	0%	100%
Percent patients with knowledge of correct doses	76.60%	100%

As per the results of this study average consultation time was 0.97 minutes which is far lower than the optimal value of 10 minutes [15]. Average dispensing time was 17.9 seconds which is lower than the optimal value of 90 seconds. Percentage of medicines actually

dispensed was 87.5% which was lower than the optimal value of 100%. Percentage of medicines adequately labeled were 0% against the optimal value of 100%. The percent of patients with adequate knowledge of correct dose was 76.80% against the standard value of 100%.

DISCUSSION

Table 3: Comparison of the World Health Organization prescribing indicators obtained in current study with other Indian studies

WHO prescribing indicators	Current study (%)	Hussain et al (%) [16]	Karand e et al. [17] (%)	Hazraet al. [18] (%)	Krishna et al. [19] (%)	Tekur and Kalra [20] (%)	Lalan et al. [21] (%)	Abidi et al. [22] (%)
Year and Place of study	2021, Aurangabad Maharashtra	2018, Lucknow Uttar Pradesh	2005, Sion Mumbai	2000, Parganas West Bengal	2013, fatehgarh, Uttar Pradesh	2012, Delhi	2012, Pune, Maharashtra	2012, Meerut, Uttar Pradesh
Sample size	600	1000	500	312	1186	300	1200	237
Average no of drugs per encounter	3.2	2.91	1.6-1.8	2.8	2.8	2.8	3.62	4.22
Drugs prescribed by generic name	92.2%	10.05	100	46.2	11.88	15.1	100	3.79
Encounter with antibiotics	45.9%	19.70	20.0-26.8%	72.8	44.94	20	46.17	-
Encounter with injection	9.8%	2.20	13.4%-24.1%	3.9	1.94	-	0.17	6.19
Drugs from EDL (national)	100	100	100	45.7	81.96	81.4	81.6	53.25

Average number of drugs per encounter was 3.2 which was more than the optimal value (1.6-1.8)[15]. While similar results were found in other Indian studies, where the average number of drugs per encounter has been reported in the range of 2.8–4.2 [16-20][Table 3].

Drugs were prescribed by generic names in 92.2% of prescriptions, which was lower than the standard value (100%)[15]. This figure is higher as compared to other Indian studies in which the range has been reported between 46.2% and 100% [16-22][Table 3]. As infectious diseases are more prevalent in the developing countries, WHO anticipates that 20.0%–26.8% of prescriptions would contain an antibiotic[15]. In the present study, the total number of encounters with an antibiotic was 45.90%, which is much greater than the standard value (20.0%–26.8%)[15]. This figure is similar as compared to other Indian studies, in which have even reported in the range 20%–72.8%[16-22][Table 3]. The total number of encounters with injectable was 9.8%, which is lower than

standard value (13.4%–24.1%)[15]. The percentage of drugs prescribed from the EDL of India was 100%, which is according to the standard value (100%)[15].

This study provides us with an important insight into the key dimensions of prescribing patterns by interns. Our study shows that the average number of drugs per encounter was high which indicate that drugs need to be prescribed based on clinical diagnosis according to standard treatment protocol and not according to clinical symptoms. It also indicates the pressure from the patients to prescribe more medicines. Patients coming to UHTC are mostly poor and come to OPD when the medical condition has worsened. At such times, they expect quick relief from symptoms so that they can resume their work and do not lose their daily wages. Also the registration fees in the clinic, though nominal, compels them to demand for medicines. Prescription of multiple medicines also causes a great waste of healthcare budget which can be utilized elsewhere. In this study



encounter with antibiotics was 45.9% which was very high. Irrational prescribing and overuse of antibiotics leads to antibiotic resistance which is an emerging global health issue. The average consultation time which indicates the time a doctor spends with the patient was found to be very low in this study. Though more studies are needed to understand whether this is a common trend in medical colleges as well, this points towards a serious trend which needs to be urgently reversed. Proper history taking and examination along with patient counseling is important. The correct knowledge of dosage of the drugs was found to be lacking in some patients. This may be attributed to no labeling

of drugs as well as lack of explanation on part of doctor and pharmacist.

CONCLUSION

There is an urgent need to educate the medical students about antibiotic stewardship. Drug prescription should be based on standard treatment protocols. A training programme before internship will help in improving the standards of prescription patterns. Also continuous assessment of rational drug use is recommended in the health facilities. Communication and dialogue with patients is another area where much work needs to be done.



REFERENCES

1. McKenzie S, Mellis C. The impact on internship of a tailored intern preparation package. *Adv Med Educ Pract.* 2018;9:639–48.
2. Mishore KM, Bekele NA, Yirba TY, Abone TF. Evaluation of drug use pattern in emergency department of dilchora referral hospital, Dire Dawa Ethiopia. *Emerg Med Int.* 2020;1:1–6.
3. Bilal AI, Osman ED, Mulugeta A. Assessment of medicines use pattern using World Health Organization's prescribing, patient care and health facility indicators in selected health facilities in eastern Ethiopia. *Health Serv Res.* 2016;16(144):7.
4. World Health Organization. Rational use of Medicines. World Health Organization; 2010. Available from: http://www.who.int/medicines/areas/rational_use/en/index.html
5. Ofori-assenso R, Brhlikova P, Pollock AM. Prescribing indicators at primary health care centers within the WHO African region: a systematic analysis (1995–2015). *BMC Public Health*[Internet]. 2016;16(724):1–14. Available from: <http://dx.doi.org/10.1186/s12889-016-3428-8>
6. Laing RO, Hogerzeil HV. Ten recommendations to improve use of medicines in developing countries. *Health Policy and Planning.* 2001;16(1):13–20.
7. Desalegn AA. Assessment of drug use pattern using WHO prescribing indicators at Hawassa University teaching and referral hospital, south Ethiopia: a cross-sectional study. *BMC Health Serv Res*[Internet]. 2013;13(1):170. Available from: <https://doi.org/10.1186/1472-6963-13-170>
8. Atif M, Sarwar MR, Azeem M, Umer D, Rauf A, Rasool A, et al. Assessment of WHO/INRUD core drug use indicators in two tertiary care hospitals of Bahawalpur, Punjab, Pakistan. *J Pharm Policy Pract.* 2016;9(1):27.
9. Berha AB, Seyoum N. Evaluation of drug prescription pattern using world health organization prescribing indicators in tikuranbessa specialized hospital : a cross-sectional study. *J Drug Deliv Ther.* 2018;8(1):74–80
10. Akl OA, El Mahalli AA, Elkahky AA, Salem AM. WHO/INRUD drug use indicators at primary healthcare centers in Alexandria, Egypt. *J Taibah Univ Med Sci.* 2014;9(1):54–64.
11. Atif M, Azeem M, Sarwar MR, Shahid S, Javaid S, Ikram H, et al. WHO/INRUD prescribing indicators and prescribing trends of antibiotics in the Accident and Emergency Department of Bahawal Victoria Hospital, Pakistan. *SpringerPlus.* 2016;5(1):1928.
12. Assefa T., Abera B., Bacha T., Beedemariam G. Prescription completeness and drug use pattern in the university teaching hospital, Addis Ababa, Ethiopia. *Journal of Basic and Clinical Pharmacy.* 2018;9(2):90–95
13. Chandra S., Khan I. N., Mateenudin M., Chandrakapure A., Maaz S., Mubin F. Drug utilization study in OPD of a tertiary care hospital in a rural area of Jalna, Maharashtra, India by using WHO prescribing indicators. *International Journal of Basic & Clinical Pharmacology.* 2017;7(1):52.
14. World Health Organization. How to Investigate Drug Use in Health Facilities: Selected Drug Use Indicators. Geneva: World Health Organization;1993



15. Isah AO, Ross-Degnan D, Quick J, Laing R, Mabadeje AF. The Development of Standard Values for the WHO Drug use Prescribing Indicators. ICUM/EDM/WHO. Available from: http://www.archives.who.int/prduc2004/rd ucd/ICIUM_Posters/1a2_txt.htm.
16. Hussain S, Yadav SS, Sawlani KK, Khattri S. Assessment of drug prescribing pattern using world health organization indicators in a tertiary care teaching hospital. *Indian J Public Health* 2018;62:156-8.
17. Karande S, Sankhe P, Kulkarni M. Patterns of prescription and drug dispensing. *Indian J Pediatr* 2005;72:117-21.
18. Hazra A, Tripathi SK, Alam MS. Prescribing and dispensing activities at the health facilities of a non-governmental organization. *Natl Med J India* 2000;13:177-82.
19. Krishna J, Goel S, Singh A, Roy A, Divya DC, Shamsi MS. Evaluation of prescription pattern and drug dispensing from a pediatric outpatient department of a tertiary care hospital. *Indian J Sci Res* 2015;6:113-7.
20. Tekur U, Kalra BS. Monitoring an interventional programme of drug utilization in a health facility of Delhi. *Indian J Med Res* 2012;135:675-7.
21. Lalan BK, Hiray RS, Ghongane BB. Drug prescription pattern of outpatients in a tertiary care teaching hospital in Maharashtra. *Int J Pharm Biol Sci* 2012;3:225-9.
22. Abidi A, Gupta S, Kansal S, Ramgopal. Prescription auditing and drug utilization pattern in a tertiary care teaching hospital of Western UP. *Int J Basic Clin Pharm* 2012;1:184-90.